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Citrus fruits - Estimate

The Citrus Fruit Outlook For 1935

The number and age of orange and grapefruit trees in the United States indicate increasingly heavy supplies, particularly of grapefruit. Over a period of years it does not seem probable that demand for citrus fruit, particularly grapefruit, will increase so rapidly as available supplies. Of the total of approximately 754,000 acres of oranges and grapefruit about one-sixth is not of bearing age and about one-half the trees of bearing age are less than 15 years old and have not reached full bearing capacity. The upward trend in production is therefore expected to continue unless changed by damage to trees from storms, freezes or other causes. Plantings in the last 2 or 3 years have been at a somewhat slower rate than in the preceding 2 or 3 years. The bearing acreage of lemons has been fairly constant since 1925 but has increased slightly in the last year.

During the 4 years ended in 1934 orange and grapefruit production averaged 68,000,000 boxes compared with 44,000,000 boxes in the 4 years 1924-27, or an increase of more than 50 percent. The estimated production in 1934-35 of nearly 77,000,000 boxes of oranges and grapefruit is roughly equivalent to 46 pounds per captia for the population of the United States. With the trees now in groves it would be possible, under favorable weather conditions, to reach a production of 90,000,000 to 100,000,000 boxes within a few years.

Cost of citrus production per acre shown a downward trend from 1930 to 1933. Data procured by the California Citrus League indicate that the cost of producing oranges up to picking time in 1933 was about 55 percent of the cost in 1930 and that of lemons about 67 percent. Figures obtained by the Agricultural Extension Service of the University of Florida from records kept by growers indicate that the per acre cost of producing citrus fruit, mostly oranges and grapefruit, up to picking time, excluding interest and depreciation, in 1932-33 was about 75 per cent of that in 1930-31. The low point was perhaps reached in 1933, since which time cost per acre has increased.

A marked increase in the demand for oranges and grapefruit occurred from 1921 to 1929. The demand then fell off sharply owing to the decline in consumer purchasing power, which with increased production forced prices to very low levels. During the last season, prices were slightly higher than in the preceding season, chiefly because of smaller supplies. The higher prices of staple food products will make it more difficult to continue the expansion of citrus consumption among families with small incomes.

Foreign markets have usually taken about 7 or 8 percent of the United States orange and grapefruit crop in recent years. Canada and the United Kingdom are the principal countries receiving United States citrus fruit. Under current exchange rates, tariff on United States shipments to Canada is about 70 cents per box on both oranges and grapefruit, and to the United Kingdom it is approximately 75 cents per box on grapefruit and on oranges 55 cents per box from April 1 to November 30 and 10 percent ad valorom during the remainder of the year.

Increased competition in the world markets may be expected, because of increasing production of oranges and grapefruit, particularly the latter. The average world production of lemons will probably continue for some years at about the present level.

The outlook for the 1934-35 season is for large supplies of citrus fruit. The October 1 estimate indicated a crop of oranges and grapefruit 25 percent greater than last season and 30 percent greater than the 5-year average, 1927-31.

In order to improve marketing conditions, marketing agreements are being adopted and put into operation in California, Arizona, Florida, Texes and Puerto Rico under authority of the Agricultural Adjustment Act. With these agreements, an attempt is to avoid glutting the markets to a point at which prices become so low that producers actually lose money from some of their fruit and receive little for the remainder.

The operation of the marketing agreements in the citrus industry is intended to stabilize the market, improve the quality of the fruit moving into consumption, reduce the risk from violent fluctuations, and move oranges and grapefruit into consumption at a higher average price than would prevail without a program. Experience in the operation of citrus marketing agreements for the

(Continued on page 20)

Importance Of Citrus Records

RADIO TALK WRUF, OCTOBER 22, 1934

By H. H. HOWARD

The keeping of citrus grove records in Florida was begun in 1930 as a cooperative project between the growers and the Department of Agricultural were 118 citrus growers in 1930-31, 200 in 1931-32 and 268 in 1932-33 who furnished records of costs and returns on groves either owned or operated by them. Most of these records were kept in a record book specially prepared by the Department. However, some growers who already had suitable record books for use throughout the year cooperated by furnishing comparable information from their books at the end of each year. Both these records and those kept in specially prepared citrus record book were summarized and returned to growers.

The grove record books are distributed during September and October of each year and are closed the following year, the fiscal year being September 1 to August 31 of each year. The citrus records are now being closed for the year 1933-34 and new books are being distributed to growers who wish to cooperate.

The purposes of the grove record project are:

FIRST: To provide growers with record books in which to keep records of grove expenses, receipts and other information.

SECOND: To provide information on grove costs, returns and management practices, thereby enabling the grower to study and become acquainted with the business in order that he might operate his grove more efficiently and profitably.

THIRD: To assist in studying grove costs and returns for greatest profits.

The specially prepared citrus record book used by growers provides space for a tree record, grove and equipment inventory, monthly expense records by operations and materials used, sales of fruit by varities and grades, and yearly summary of grove costs and returns, including space for a profit or loss statement, all of which are made in duplicate. The original copy of the information is kept in the record book and the carbon copies are torn out and mailed to the respective Agricultural Agents of the counties in which the groves are located, or direct to the Gainesville office, The original copies of the year's citrus records are the property of the cooperator and are filed by him for future reference and information. The importance and value of such a permanent record will depend in part upon the present and future need for a record of costs and returns in business transactions.

The need for such records has been demonstrated recently in several ways, one of which was in assisting growers in filling out application forms to obtain credit through the Federal Lank Bank at Columbia, Production Credit Corporations, and other agencies. In addition to the cooperator having a permanent record book of his grove business, the department furnished each cooperator with a summary of his costs and returns soon after the end of the year so that he might compare the results of his management practices with those of similar groves. This comparison often results in change of some method or practice by the grower in an effort to put the business on a more profitable basis.

The prices received for fruit have been unusually low for the past three years as compared to previous years. However, growers have reduced their cost of production which enabled most of them to make some profit as revealed by a recent report of costs and returns for three years of 62 grove records. For the year 1930-31 the average cost was $81.97 per acre; for 1931-32, $73.27 per acre and for the year 1932-33 the cost was $61.85 per acre. This represents a reduction of cost for the year 1931-22 below that of 1934-31 of 11 percent, and a reduction in 1932-33 below that of 1930-31. All items were less except the cost of spray and dust material used. This cost per acre amounted to $2.74 in 1930-31, $3.50 in 1931-32 and $4.27 in 1932-33.

The cost of fertilizer showed the greatest decline during the three year period in question. The reduction $11.09 per acre from 1930-31 to 1932-33 was largely due to lower prices for fertilizer and fertilizer material and more economical fertilizer practices. The amount of available ammonia, phosphoric acid and potash applied for the 62 groves remained practically the same for each of the three years. The reduced cost per acre over the three year period had little, if any, effect upon yield. The average yield per acre for the crop year 1930-31 was 150 boxes, for 1931-32 168 boxes, and for 1932-33 148 boxes. However, in 1932-33 the tropical storm in September blew off and damaged approximately 15 percent of the fruit from these groves. Grapefruit was damaged more than oranges.

The net returns per box for interest invested in the grove and the owner's time for supervising the groves was less for the crop produced in 1931-32 which was less than 1¼ cents per box. However, for the crop produced in 1930-31 and 1932-33 average net return was approximately the same—39 cents per box, The slight decrease in boxes sold in 1932-33 was off-set by a slight increase in price received for Valencia oranges.

Irrigating To Hold The Citrus Crop

By E. F. DeBUSK, Citriculturist

In sections of the citrus belt where the rainfall has been light since about the middle of August the moisture content of the soil is running low in the second and third foot depths. Recent rains have been rather spotted, and in certains sections light. It is very important at this time to examine the soil at least 3 feet deep, as to its moisture content, and where irrigation water is available, apply sufficient water to build up a reasonable moisture content to the depth of the root zone.

In many instances recent light rains have penetrated to a depth of about 1 foot. Below that depth the moisture from the heavier rains back in August has been almost exhausted. These light rains penetrating only a few inches deep last a very short

(Continued on page 22)

Some Needs of the Citrus Industry In Hillsborough County

By C. P. WRIGHT, County Agent

Citrus growing in Hillsborough County has been carried on for almost one hundred years. General Dade, on his memorable march from Fort Brooks, Tampa, to Fort King, now Ocala, dropped seed from Cuban sweet oranges—which he carried in his saddle-bag, near Lake Thonotasassa in 1843. From these seed, planted by chance, grew the first seedling trees. they were accidentally found later full of ripe fruit, and some of the trees were removed by William Miley to his place at Thonotasassa in 1850. One of the original trees he removed is still standing and bearing fruit. This tree is known as the "Dade Tree' and from it, has sprung most of the seedling trees of East Hillsborough County.

From this humble beginning, the leading industry of the county has been developed. We now have approximately twenty thousand acres in bearing citrus, and, under normal conditions, this crop will average from three to four million dollars per year.

The early plantings of citrus were confined to the well-drained hammock lands bordering the lakes and streams. This soil was so rich in organic matter that a high quality fruit was produced for years with practically no fertilizer. As the industry grew and the budding of improved varieties came into general practice, citrus plantings were made on higher and lighter soils. This type of soil in Hillsborough county, like that of most parts of the citrus belt, is highly deficient in organic matter. The cheapest and most practical way to add humus or organic matter to the soil is through growing cover crops. Several years ago many of our larger growers practiced clean cultivation, but today they are turning toward more cover crops and less cultivation. Clean cultivation is both expensive and injurious to the grove, as many of the feeder roots are destroyed and the soil dries out. The quality of fruit may also be improved by reducing the amount of cultivation.

Due to the light character of soils, warm climate, and long growing season, oxidation and evaporation takes place very rapidly. This handicap can be overcome to a large measure by working the cover crop into the soil lightly or spreading it under the trees as a mulch. If this practice is followed the organic matter will be available to the trees much longer, and at the same time the roots will be protected from the hot sun. Cover crops, when properly handled, will increase the efficiency of fertilizer and thereby reduce the production cost.

Realizing that organic matter is the crying need of our citrus and trucking soils, the Florida Extension Service, through the county agents, has been instrumental in importing hundreds of thousands of pounds of crotalaria and other cover crop seeds the last several years. Today many larger growers are devoting a great deal of time and effort toward growing cover crops, and it is interesting to know that they are producing high quality fruit at a very low cost. Cover crops will not take the place of a complete fertilizer, but they make the materials in the fertilizer more available to the plant. Generally speaking, the more organic matter one turns under, the more profit one can make of the fertilizer used. By following intelligent fertilizer practices, yields may be increased, and production costs reduced to a minimum.

A liberal application of fertilizer in the fall, to build up a reserve in the trees, and a top dressing of readily available nitrogen just before blooming time, should, under normal conditions, set a good crop of fruit.

With the increase in production and the restrictions on moving low grade fruit out of the state, it is very evident that our growers must produce a high quality fruit in the future if they expect to realize a profit on their groves.

Next to intelligent fertilizer practices, an adequate irrigation system on most of our groves will go toward producing quality fruit, and return more on the investment than any other one factor. Due to the high water table and the numerous fresh water streams and lakes in Florida, efficient irrigation systems can be installed on most groves at a very low cost. Irrigation makes it possible to set and hold a good crop of fruit in a dry season, and improve the size and quality of the fruit.

Due to the general depression and the low returns on fruit the last several years, many growers have been forced to neglect their groves. But with better marketing conditions and the increasing demand for bright fruit,, growers will be justified in spending more money on dusting and spray materials. The rust mite has taken a heavy toll on our citrus crops the past few years, but it is gratifying to know that most of the larger growers have this pest under control this year.

With economical production and better prices for good fruit, citrus growing will be a profitable business for many years to come.

F. D. RICHEY NAMED CHIEF BUREAU OF PLANT INDUSTRY

Secretary of Agriculture Henry A. Wallace recently announced the appointment of Frederick D. Richey as Chief of the Bureau of Plant Industry, vice Knowles A. Ryerson. Mr. Ryerson will resume his earlier work with citrus fruits, avocadoes, dates, papayas, mangoes and other tropical fruits, heading a section of Subtropical Horticulture in the Department. Mr. Richey who succeeds Mr. Ryerson has been in the Bureau of Plant Industry for more than 23 years, having been in the Division of Cereal Crops and Diseases until January 1 of this year when he was appointed Associate Chief of the Bureau, which he now heads.

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Citrus Waste For Livestock Feeding

State Experiment Station Has Good Results From Grapefruit Cannery Refuse

By JEFFERSON THOMAS

When Jersey cows in the herd of the State Agricultural Experiment Station at Gainesville were offered dried grapefruit cannery refuse, after having eaten the rations daily fed to them, 27 of the 31 cows learned to consume the product, of their own volition, in from one to six days. Four steers accepted the new feed from the beginning.

Palatability of the waste, which had undergone drying, thus was established. Flavor of the grapefruit refuse in the form it was fed apparently was unobjectionable to the animals, since they voluntarily increased the proportions of it eaten, from day to day.

Tests for determining the digestibility of the product also were conducted at the Station farm. These were of 30 day duration, ten days in a preliminary feeding period and then 20 days for collection of the materials required in chemical analysis.

Value of feeds of course depends upon the digestible nutritents they contain. Few of them can be used as the sole diet for animals. In the experiments, the grapefruit refuse accordingly was combined with cut No. 1 alfalfa hay and cottonseed meal.

Mixed with the other ingredients, the waste was fed dry. Cattle eating a large proportion of it took on a sleek, oily appearance, indicating thriftness. The new feed also tended to have a moderately laxative effect.

What The Product Contains

Grapefruit cannery waste as fed in the experiments included the peel, the rag and a few seeds. Refuse of the canning plants when fresh has a moisture content of more than 80 percent. Reduction thereof to eight or ten percent is required in providing a product that is merchantable as a commercial feedstuff.

Processes have been patented which remove the excess moisture, through a system of pressing and exposure to heat. After all but a small portion of the water has been eliminated, the material is placed in bags and allowed to stand in warehouses, under air-dry conditions, for a short time.

In the dried form that thus has been developed, used in the Experiment Station tests, the grapefruit cannery refuse is a concentrate, high in digestible carbohydrates and low in protein.

Composition and feeding value, analysis of the dried product, coefficients of digestibility and nutrients, are summarized in the table which follows:

	Water	Total crude protein	Crude fiber	Nitrogen free extract	Ether extract	Ash	Total digestible nutrents
	percent	percent	percent	percent	percent	percent	percent
Chemical analysis	8.23	4.94	11.94	69.60	1.06	4.23	-----
Coefficient of digestibility	-----	24.83	71.52	92.43	79.39	-----	-----
Digestible nutrients, average	-----	1.23	8.54	64.33	.84*	-----	75.99

* Ether extract (crude fat) has a high energy value. It is customary to place ether extract on an equivalent energy basis, multiplying it by 2.25 before adding with the other nutrients in calculating "total digestible nutrients."

Economic Factors Involved

Use of grapefruit cannery waste in dried shape is suggested by the Station workers as a substitute for part of the corn feed meal given to animals. Utilization of the product instead of dry beet pulp also will occur to the reader as a possibility, since the totals of digestible nutrients are so nearly the same.

Values of an economic nature possessed by the product obviously would become three-fold with the adoption of it as a livestock feed on a widespread scale, even if the distribution was confined within the borders of Florida.

Savings of a direct character that could be made by farmers and diarymen doubtless would prove the determining factor in respect to the degree in which they purchased and used the by-product of canning factories.

Benefits of a financial type would come to the citrus fruit grove owners in proportion as the demand for grapefruit refuse grew into a matter of substantial proportions, and was well maintained.

Business and fiscal interests in the state, outside of agriculture, would profit hugely from extensive reliance by stockmen on home-grown feedstuffs, taking the place of other now imported.

Confidence in further developments that will assist in bringing about the feeding of grapefruit waste is encouraged by the favorable results of all the tests so far made.

In 1925, the Experiment Station conducted trials with six Jersey caws, which were fed dried grapefruit refuse from canneries, furnished by the Florida Citrus Exchange.

Increased milk production was recorded from the animals that received additions to their rations made up of the by-product from the citrus plants.

Studies of the problem were resumed at the Station in 1931 and the 1933-34 results were made public on November 1st of this year.

Trials Yet To Be Completed

Remaining to be completed are two other experiments with grapefruit refuse as cattle feed. One of these consists of biological feeding tests and the other comprises comparative feeding trials. While the results obtained to date are preliminary and tentative, they have been such as seemingly forcast a satisfactory outcome.

Timeliness of the endeavor becomes self-evident when it is taken into consideration that Florida citrus

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groves now have on the trees a crop of fruit that is almost of record-breaking size. Marketing possibilities emphasize the need for enlarged outlets.

Industry response to the opportunites and responsibilities of the situation, respecting increased consumption, might assume an efficiency not now indicated as forthcoming, without lessening the importance of by-products disposal.

Depression conditions have failed to reduce the cannery utilization of citrus in Florida below an average for the past two or three years of around one box out of every ten produced.

Surveys also made by the State Agricultural Experiment Station have disclosed that from 65 to 75 percent of the grapefruit taken by the canneries remained as waste and was discarded.

In a five-year period, beginning with the 1929-30 season and ended in 1933-34, the refuse at the grapefruit canning plants of the state averaged 64,642 tons a year.

Dairymen and livestock raisers, on the other hand, annually obtain feedstuffs from outside the state, costing them into the millions of dollars.

While probably it is true that grapefruit refuse never would take the place of the larger portion, it might supplant a goodly part.

Diversion into the citrus industry even of a few hundreds of thousands for what is now waste would help it a lot.

Grapefruit refuse for stock feeding therefore holds distinctly promising potentialities.

Termites and Ants In Banked Trees

By J. R. WATSON

The habit of citrus growers about this time of the year is to bank their young trees as a precaution against the loss in a possible freeze during the winter. In banking trees, it is necessary to take precautions against two insect pests which often severely damage banked trees.

One of these is termintes, often called "wood lice", and still more frequently spoken of as white ants, although they are not at all closely related to true ants. Indeed, they are much more closely related to cockroaches than they are to ants. However, they have somewhat the appearance of ants except for the dirty white color of the workers and have a similar social organization. They have in a colony not only the kings and queens which are the reproductive individuals but numerous sterile workers of often a different kind, such as soldiers, etc. They differ from the true ants in that the workers may be males or females, whereas in true ants they are all males. Termites feed almost exclusively on woody material, either on wood or material made of wood, such as paper or cotton fabrics. The one which is most liable to make trouble on a banked tree lives on dead wood chiefly, but if hard pressed for food they will attack living wood.

The important precaution to take in banking trees is that no dead wood is thrown into the bank this will often serve as food for the termites, and when it has been consumed the termites will then attack the tree itself. Only good clean dirt free from wood should be used in banking the trees. It is also important that all dead stubs should be removed from the trees, namely, the lower part of the tree which would be covered with the bank. Termites working in these dead stubs will be apt to attack the living part of the tree. They will often quickly girdle a young tree which, of course, will die.

If termites are found working in a tree the bank should be torn down at once and scattered. Pull the dirt away not only from the trunk of the tree but from the larger roots as well. Termites, like many other workers of iniquity, cannot tolerate light and sunshine. Pulling away the bank of dirt from the tree will stop their depredations.

Ants like a dry place for their nests, and the bank of a citrus tree gives them ideal quarters. From the bank they will often work down among the roots of a tree and will frequently kill it. Therefore, banked trees should be watched during the winter, and if signs of an ant nest are apparent, as in the case of termites, the banks should be promptly torn down and the dirt pulled away from the base of the tree so that instead of being a bank there will be a hollow. This will have a tendency to collect water during a rainstorm and make conditions undesirable for them. However, ants are not so easily driven away from a tree as termites, and it is often desirable to take additional measures to drive them away from the base of a tree. One of the best compounds we have found for this purpose is the carbolic acid emulsion. This is made from a pint of crude carbolic acid, or a pound of crystals, a pound of fish oil soap, or any strong laundry soap, and 3 gallons of water. The water is heated, the soap then dissolved in it, and last of all the carbolic acid added. This is emulsified by forcing it through a spray pump several times until you get an even white emulsion. This should be poured around the base of a tree in a shallow basin. It is not necessary to thoroughly soak the ground underneath the tree as the presence of the emulsion on the surface of the ground will drive the ants away. We have never noticed any injury to a citrus tree from the use of this carbolic acid emulsion. Putting a heavy mulch around the tree such as grass or leaves, will have a tendency to drive away the little black or red ants which so commonly nest about trees. These ants want sunshine around their nest and will leave if the ground is heavily shaded by a mulch. The mulch, of course, must be spread around the tree after the trees are banked with dirt. The dirt should not be thrown on top of the mulch. However, the large red ants, frequently called night ants will nest in this mulch, so mulching will not be of any value against these ants. However, this species of ant does not seem to injure a citrus tree as does the small

(Continued on page 25)

Frank Kay Anderson

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Effects of Zinc Sulphate on Frenched Citrus In Polk County

By W. P. HAYMAN, County Agent

General interest is being centered at this time by growers of Polk county in the application of zinc sulphate to citrus trees as a means of correcting frenching, which has been a serious problem with citrus growers for many years.

Frenching is sometimes called mottle leaf or chlorosis. It is a condition of partial chlorosis of the foilage, which is yellowed areas between the veins on either side of the mid-rib, with that portion along the viens and the edge of the leaf remaining green As the injury from this disease becomes more severe the yellow areas enlarge and the leaves on the new growth become smaller in size, the tree apparently falling into a state of decline, with limbs and twigs dying from the tip back. The leaves are mottled in appearance, small, narrow, and pointed, resulting in a decreased yield of small sized inferior quality fruit. Trees of this character have not responded as they should to the various treatments given them.

The gratifying results obtained by the Experiment Station by applying zinc sulphate to the soil for correctiing bronzing in tung trees directed attention to the use of this material as a remedy for frenching of citrus.

Applications of zinc sulphate were first applied to the soil broadcast, using 2 to 10 pounds per tree. A few trees showed response, but apparently only where the soil was deficient in this element. It is only on certain types of soil that favorable reactions were noted from soil applications.

Greatest results were obtained by spraying with zinc sulphate, the response to such treatment was most marvelous.

Badly frenched trees with dead wood and apparently in a state of decline, sprayed in early spring, produced a vigorous, healthy growth, set a crop of fruit, and many of the old frenched leaves regained their normal color in four to six weeks after spraying. In some cases where only half the tree was sprayed excellent results were produced, while the unsprayed portion showed no improvement.

Where frenching existed, the pineapple variety responded more quickly to zinc sulphate treatment than most other varieties of citrus, while all varieties showed some results. Trees with practically no foilage, sprayed prior to the seasonal growth period, produced splendid foilage and the trees returned to normal condition.

It can be said with authority that spraying with zinc sulphate will produce exceptional results where the condition of the soil and trees justify it. It is not a cure for all ills that exist in a grove and should go hand in hand with proper fertilization and other practices that go with good grove management. It will supplement certain deficiencies that exist.

There are certain salient factors to be taken into consideration if one is to expect effective results from zinc sulphate spraying. The first perhaps is the strength of the material used and its mixing with various combinations. Most recommendations in the county are based on an 89% zinc sulphate, which carries 36% actual zinc. There are other zincs available, one contains 63% zinc sulphate, and another 56%. The analysis should be taken into consideration in compounding the mixtures. Prices are based on the zinc content of the material.

Zinc sulphate is acid in nature and should be neutralized with such materials as hydrated lime or liquid lime sulphur for its safe use, otherwise, if improperly mixed and used may cause damage to foilage, fruit, and equipment.

The formulas that have given best results and are used mostly in the county today, where conditions warrant the use of zinc sulphate for the control of frenching, are as follows:

8 to 10 pounds of 89% zinc sulphate
5 pounds finely ground hydrated lime
1 pound calcium caseinate
100 gallons of water

Where it is desired, zinc sulphate can be mixed with lime sulphur solution at the rate of:

5 pounds of 89% sinc sulphate
2 gallons lime sulphur solution
100 gallons water

Addition of wettable sulphur can be used to increase the sulphur content.

The insecticidal value of this formula has not been determined, and

(Continued on page 26)

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IMPRESSIONS

By Frank Kay Anderson

Not many persons consciously connect Lake Poinsett near Cocoa with Florida's glorious flower, the Poinsettia . . . but both are named for Joel Roberts Poinsett . . . who was secretary of War under Van Buren from 1837 to 1841 . . . Florida then up for close attention from the War Department because of the Seminole Indians . . . Secretary Poinsett gave Florida a lot of time and personal attention . . . a close student of botany, he called scientific notice to the flower which they later named Euphorbia Poinsettia in his honor . . . but today only botanists remember the Euphorbia part . . . and a very great many persons never heard of Joel Roberts Poinsett . . . Vance Douglas of Sanford recently pulled the queerest party . . . About fifty gathered at his invitation at his camp on the old Brumley ranch out on the edge of the St. Johns valley southeast of Geneva . . . No one seemed to know why they were there, except that they had been asked . . . When in late afternoon all had gathered, Vance briefly said he just wanted to pull a party where no one would make a speech . . . So we sat around in groups and yarned and told fish lies and what not . . . and a lot of fun was had by catching notables with a moving picture camera in the act of drinking a bottle of beer or doing something else which might not be good publicity if released to their respective Sunday school classes . . . and then they fed us . . . and how . . . such grub, and sufficient to last a fellow for a couple of days . . . then dusk and the cars scattered, carrying their occupants over five counties . . . everybody happy and sober, but a bit bewildered because nobody had made a speech or asked support for anything . . . voting Vance Douglas a prince of a host . . . but with their fingers crossed because it seemed just too good to be true . . . J. J. (Jess) Parrish of Titusville stuck around until the darkies told him there were no lights, suggesting he might as well go home, just trying to find out what it was all about . . . Except for Vance, and Jess, Dr. J. W. Martin of Oviedo and ourself . . . whose reputations are so highly placed and thoroughly established that we have nothing to fear from publicity of any sort . . . we are suppressing the names of the other participants, it's hard to tell what the aftermath of such a party may be . . . just too innocent and joyful to be wholly true . . . Maybe, too, some of the participants didn't go directly home and arrive at the same early hour that we did . . . Then next day down to Tampa to the luncheon celebrating the twenty-fifth anniversary of the Florida Citrus Exchange . . . and what a gathering . . . some four hundred gathered at L. B. Skinner's Hillsboro hotel to honor it . . . and a delightful affair from the time our old friend Fred A. Turner gave the invocation until President John S. Taylor of the Exchange brought it to a close some three hours later . . . At Vance Douglas' party the eats were the thing . . . at this Tampa gathering the eats were only an incident . . . for us the reunion with one and another of the old-timers was the outstanding treat . . . It was worth the trip to Tampa to us for the few minutes we had with George A. Scott, who was down from Philadelphia for the occasion . . . not to mention a dozen others . . . Sad though to note how the ranks are thinning . . . Of the original forty-one growers who made the trip to California and came back to Florida to launch the cooperative only six were present that day . . . J. Arthur Griffin, Tampa banker, made the welcoming talk . . . we liked his keynote speech quite a little . . . he still thinks the old-fashioned virtues will survive, no matter what the tinkering . . . Frank G. Clark of Indian River City came back at him, but omitted to mention that he, Frank Clark, is almost Florida's sole surviving active Republican . . . Charles H. Walker of Bartow, Avon Park and intervening points told of the California trip of the original Florida party of growers of which he served as the secretary . . . C. E. (Ned) Stewart of DeLand related a lot of reminisences of earlier days of the Exchange, which were well received . . . incidentally we thank him greatly for his nice mention of our own participation in one of the successful activities . . . R. P. Barton told of the early effort in organizing the Exchange's first sales department, of which he was the head . . . a lot more talks, and all worth hearing . . . A. M. (Bunny) Tilden of Winter Haven; S. L. (Sam) Looney of Tampa; George A. Scott, now running the Exchange's Philadelphia office; George H. (Diamond K) Koplin of Winter Haven; Judge J. W. Perkins of DeLand, and others . . . T. H. Powell, general sales-manager, and W. B. Geissinger, advertising manager, of the California Fruit Growers Exchange, who were present as guests, took a bow . . . and Paul S. Armstrong, general manager of the California citrus co-op, made a nice talk . . . except we didn't like where he invited Florida not to tell the world that Florida oranges have considerably more juice . . . For the last they saved the inimitable Colonel Tom Palmer of Tampa, one of the original California-journeying party and charter member of the Exchange . . . During that California tour twenty-odd years ago he was the official spokesman for the Floridians . . . and has been ever since . . . for the simple reason that he does it so well, and is so entertaining . . . Earl Lines was most industrious as one of the hosts assisting Senator Taylor . . . John B. Rust was pretty active that way too . . . C. C. Commander was noticeably absent . . we commented upon his absence and someone volunteered it was in order to attend the funeral of a relative . . . A lot of enjoyable visiting among the guests . . . a nice party, and an important anniversary fittingly celebrated . . . no hurry to leave when the show was over, even though getting late . . . Finally though they thinned out and took their leave . . . On the way out we were doing some farewell visiting with J. W .Sample and Erle Wirt when someone tapped us on the shoulder . . . there was ribald comment upon our journeying about for free meals . . . and there was Dr. J. Wm. Martin of Oviedo . . . who with us had b e e n one of Vance Douglas' guests the day before . . . Then we looked up Louis Hakes of Orlando, with whom we had journeyed down to Tampa . . . and

(Continued on Page 16)

The Citrus Industry

with which is merged The Citrus Leaf

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WASHINGTON SEES HOPE

As this issue of The Citrus Industry goes to press there comes from Washington the announcement that officials of the Agricultural Adjustment Administration see hope of an early agreement on the proposed citrus control measure for Florida, and that the belief exists that the adjustment machinery will regulate the bulk of the citrus crop now going to market.

This report, if true, indicates that the agricultural administration officials have information and knowledge of the situation not possessed by citrus leaders in Florida where divergent views of conflicting interests have developed what appears to be a serious, if not insurmountable, impassee in the negotiations to bring about a harmonious adjustment of differences.

If Washington has found the solution of the problem, as the announcement seems to indicate, it will be hailed with satisfaction by the citrus growers and shippers of Florida and by all well-wishers of the state. There has been no disagreement as to the need of concerted, harmonious and united action on the part of all Florida citrus interests in support of some effective control and regulation of distribution. The disagreement has been on minor points at issue and upon the personnel of the control body. If Washington has found a satisfactory solution, all citrus interests in Florida will rejoice.

The Citrus Industry sincerely hopes that the report from Washington is well founded. Any solution which will bring conflcting interests into harmony will be welcomed not only by the growers, whose interest is vital, but also, we believe, by all shippers as well. The one thing needed to handle the present unprecedented crop with profit to the growers is a united front and harmonious action.

While this publication is not advised as to the solution administration officials have in mind, it looks forward with interest to an early announcement, in the hope that effective control may be established in time to insure the growers at least a fair return for their fruit, and to the end that a harmonious adjustment of divergent views and conflicting interests may be brought about. Neither growers nor shippers can hope for their full measure of profit until some control measure become effective.

OUR CALIFORNIA VISITORS

During the past month Florida was visited by a party of California citrus growers, headed by Editor E. A. Street, of the California Citrograph, one of the leading citrus publications of the world, under whose auspices the party visited the various citrus sections of the United States.

While in Florida, the California growers visited all sections of the Florida citrus belt, inspected our groves, investigated our methods of citrus culture and rubbed elbows with our growers. Discussions of problems of mutual interest and concern resulted in benefit to both the visitors and the visited. Not the least of these benefits was the apparent breaking down of prejudices and misunderstandings which have existed and the creation of a feeling of mutual respect and confidence which is bound to result in a closer affiliation and a spirit of greater co-operation between the growers of the two states.

Californians learned much from their visit to our groves and their interviews with our growers; Floridians got a new slant on the point of view of our chief competitors in the citrus field; both Californians and Floridians gained a greater understanding of each other. Editor Street is to be congratulated on the success of his undertaking. It would be well if such visits could be of greater frequency.

CONTROL OF SOME SORT NEEDED

With an estimated increase of ten million boxes, or more than twenty-five per cent, in the production of oranges over last season, and an increase of five and one-half million boxes, or more than thirty-five per cent, in the production of grapefruit, the need of some effective control of distribution is apparent if the grower is to receive any measure of profit from his crop.

In view of this great increase in the volume of this season's crop over that of last year, which in itself was far above the average, there is no need of argument to demonstrate the necessity for some adequate control. The need is imperative. It is to be hoped that differences of opinion and conflicting interests which have held up the adoption of effective control measures may be speedily adjusted. The grower needs it; the shipper needs it; the state needs it. It matters not so much what the adjustment may be, but it matters greatly that it be made speedily.

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Gummosis Of Citrus In Trinidad

By R. E. D. BAKER

IMPERIAL COLLEGE OF TROPICAL AGRICULTURE

I. 'Marsh' Grapefruit On Sour Orange Stock

Editorial Note. — While this article, printed in "Tropical Agriculture" the official publication of the Imperial College of Tropical Agriculture in the Island of Trinidad, has to do primarily with gumosis in that island, the findings may be of interest to citrus growers in Florida.

I.—Introduction

Gummosis disease of citrus has probably been present in Trinidad for a considerable time, but has only become of any economic importance since the development of the grapefruit industry during the past twelve years. Grapefruit (Citrus paradisi Macf) is very susceptible to gummosis, and at the present time this is easily the most serious disease of the crop in Trinidad. Unless proper precautions are taken to avoid it, gummosis is capable of killing out whole fields of grapefruit trees during their first few years of bearing, thereby causing serious losses. In addition to this, fruit from diseased trees is not normal, but being of medium size and attractive appearance tends to be included in consignments for export. It is an open question whether such fruit will behave normally in cold storage—a problem which has been noted for investigation at the Low Temperature Station.

The object of the percent paper is to put on record of a preliminary survey the gummosis disease on 'Marsh' grapefruit, the variety most commonly known in Trinidad, and at the same time to make a few recommendations for its control. The symptons of the disease are a copious exudation of gum from the trunk of the tree and subsequent death of the bark. Several fungi have been isolated including a Phytophthora species, but up to the present time none of them has definitely been proved to be pathogenic. It is hoped that it will be possible in a further paper to report more fully on the disease.

II.—Field Observations

During the dry season of 1934 a survey was made of the majority of the older grapefruit estates in Trinidad. The objects of this survey were, firstly, to see how serious gummosis was on the 'Marsh' grapefruit, and secondly to find out, if possible, how the disease was influenced by local conditions on the various estates visited. Statistical records were made on nine fields located in six estates in the Northern Range and in the centre of the island. Trees between the age of 5 and 12 years were examined, and where feasible, records were taken from at least a hundred trees in each field. The following notes were made on each tree:—

(a) the height of the bud union above the ground level,

(b) the height of the lowest fork above ground level,

(c) whether the tree was affected by gummosis or healthy,

(d) if gummosis was present, whether it was on sour orange, the grapefruit scion, or on both together.

(e) whether the tree was seriously or slightly attacked (i.e. more or less than 50 per cent, ring-barked by the disease.)

The data obtained in this way is summarised in the following table.

TABLE I.
GUMMOSIS OF 'MARSH' GRAPEFRUIT

Field.	Age of tree (years).	Number of trees examined.	Mean height of bud union (inches).	Mean height of first fork (inches).	Percentage with gummosis on grapefruit scion. Total.	Serious.	Percentage with gummosis on sour orange stock. Total.	Serious.
A	5-6	125	4.17	16.0	63.0	40.0	17.0	2.0
B	7	98	4.44	10.6	78.0	49.0	18.0	2.0
C	6	100	4.56	18.6	52.0	35.0	15.0	0.0
D	5	135	5.13	18.2	36.0	20.0	8.0	1.0
E	8-12	632	5.20	17.8	28.5	13.0	14.0	0.2
F	8	155	5.98	14.5	59.0	27.0	13.0	0.0
G	8-10	50	6.96	22.5	4.0	4.0	0.0	0.0
H	5	100	8.30	23.8	2.0	0.0	0.0	0.0
I	5	150	11.80	29.4	2.0	0.0	0.7	0.0

Two points in this table are noteworthy: firstly the obvious effect of the height of the bud union on the incidence of the disease; and secondly, the market resistance to gummosis shown by the sour orange stock. In the six fields (A, B, C, D, E and F) where the mean height of the bud union above ground level was low—i.e. between 4.17 and 5.98 inches—the percentage of diseased trees varied from 28.5 per cent to 78 per cent. In the three fields (G, H and I) however, where the mean height of the bud union above ground level was higher—6.96, 8.30 and 11.80 inches—the number of diseased trees fell to four per cent, two per cent and two per cent respectively. These figures show clearly that high-budding on resistant sour orange stock has a marked effect in reducing the incidence of gummosis.

With regard to the resistance of the sour orange stock gummosis, it can be seen from the above table that in no field was the stock seriously attacked in more than two per cent of trees examined—not even in cases where 40 per cent and 49 per cent were seriously attacked on the incidence on the sour orange stock in fields A, B, C, D, E and F seem unduly high at first sight, but this can be explained as follows: The disease attacks the tree as a rule just above the bud union, since this is the lowest point reached by the susceptible grapefruit scion. From there it spreads rapidly up the scion where most of the damage is done, but in some cases it also spreads slowly down into the highly resistant, though not completely immune sour orange stock. Generally speaking, the sour orange used as stocks for grapefruit in Trinidad showed a high degree of resistance to gummosis on all the estates visited. The important point is that on low-budded trees the disease nearly always starts on the scion.

The data was next analysed to find out in what way the percentage of diseased trees in any given field falls off as the height of the bud union above soil level increases. This is demonstrated in Fig. I. which shows that trees over five years old, with the bud union only one inch above ground level, are almost invariably attacked by gummosis but that the incidence of the disease falls off rapidly as the height of the bud union increased. A critical height would appear to be reached at about 12 inches. On the better cultivated estates, with suitable topography, nearly all the trees with the bud union 12 inches above the ground are healthy, while on other estates 10 to 20 per cent. of the trees with the bud union at this height are diseased. It is

obvious therefore that even on the best estates a minimum safe height for budding is between 12 and 18 inches, and that it would be sound practice, in the majority of cases, to bud the trees at 18 to 24 inches. Even when the standard of cultivation is high and the trees are round-weeded regularly, the height of the bud union cannot be less than 12 to 18 inches above soil level without running a serious risk of gummosis.

The effect of the height of forking of the tree on gummosis is not nearly so marked as that of the height of the bud union, but there is no doubt that it has some importance. Trees which fork low generally have their branches touching the ground all round; this will tend to raise the humidity about the trunk and probably increase the liability of the tree to attack by gummosis. On some estates (fields B, E and F) it was definitely shown that the incidence of the disease falls off as the height of forking above ground level is increased. On other estates however it has no apparent effect, and the trees which forked high appeared to be just as seriously diseased as those which forked low. A further point worthy of mention is that water is liable to run down the underside of a branch and keep it moist for longer periods than the upper side of the same branch. When the branch was near the ground it was found that this region and also the inside of the fork of the tree frequently furnished a starting point for the disease.

In two or three cases gummosis was found several feet above ground on the undersides of branches. This type of attack, high up the tree, is fortunately of infrequent occurrence in Trinidad and has only been seen in very wet areas which are hardly suitable for the cultivation of grapefruit even under the best management. Trees attacked in this way were almost always seriously attacked lower down the trunk as well.

While these records were being taken additional notes were made on the effect of other factors—such as drainage, soil, planting methods, and the standard of cultivation—on the incidence of gummosis. It was not possible to do this statistically but certain generalisations can be made from the information obtained.

Drainage. — This is a mater of great importance. Trees in wet, low-lying fields where the water table is high (as in field B) are more seriously attacked than those in drier areas. Adequate drains should be provided in grapefruit fields, as a wet soil and the rank growth of weeds resulting from failure to attend to this point porduce conditions favourable for a severe attack of gummosis.

Soil.—It is difficult to estimate the effect of different types of soil on gummosis. Grapefruit trees on a heavy wet soil are probably more seriously attacked than those on a well-drained sandy soil, but plenty of serious attacks have been seen on the latter type. It is improbable that differences in soil have any very important effect on gummosis in Trinidad.

Planting Methods.—There is obvious difficulty here of obtaining reliable information as to the influence of planting methods on disease incidence in trees which are five or more years old at the time of examination. Without a doubt the chief aim in planting should be to make the bud union as high as possible above ground level. The trees should be planted on mounds, never in holes, and adequate provision should be made for the tree to settle without the collar sinking below ground level. The worst field seen in the island field B, with 78 per cent. of the trees diseased, was one in which the trees had been planting in holes and had sunk so deep that in several cases even the bud union was buried below the ground.

Cultivation and Maintenance of Grapefruit trees.—This is undoubtedly a very important aspect. If gummosis is to be avoided in the future, more money will have to be spent on cutlassing and round-weeding than is at present the case. If grass and weeds are allowed to grow up round the trunks of the trees as far as the bud union, conditions will be damp enough at this point for gummosis to gain a hold. As a further means of reducing the humidity around the base of the tree it should be trimmed of all low branches as soon as the fruit has been picked. At the same time, a general 'cleaning up' of the trees to remove moss and epiphytes is also desirable.

These investigations show that with regard to the avoidance of gummosis on grapefruit in Trinidad two very important points are: firstly, the production of suitable trees in the nursery, and secondly the proper care of those trees after they have been planted out in the field. As recommended by Briton-Jones (1) trees should be budded at a height of 18 inches on good sour orange stock; trees should never been budded below 12 inches, and in some cases it may be beneficial to go as high as two feet. Sour orange stock is highly resistant to gummosis in Trinidad, and it is hoped that it will be possible to compare its merits in this direction with those of the rough lemon and other stocks at a later date. When plants are transferred from the nursery to the field they should be planted on mounds, never in holes, in order to keep the bud union as high as possible above ground level. The trees should be round-weeded at regular intervals, and at no time should weeds and grass be allowed to grow up above the bud union; if this is not attended to, serious risk of gummosis is incurred. In round-weeding a tree which has been planted low, care must be taken to avoid forming a saucer-shaped hollow around the around the base by hoeing away too much soil. A hollow of this nature will hold water in the wet season and render it very liable to gummosis. The young trees, which should have been headed high (at least 3 ft. 6 ins. or 4 ft.) in the nursery, should be carefully pruned so as to remove all down-growing and low branches. This can be done easily with pruning scissors in the early stages thus saving the expense of a heavy trimming when the trees are older. The object of this trimming is to admit air and light to the trunk of the tree, and by so doing reduce the chances of gummosis attack. If grapefruit is raised and cared for in this way there should be little to fear from the disease.

These recommendations are, however, of little value to estate owners who have large areas planted in grapefruit already seriously attacked by gummosis. Many of these trees are low budded and low planted, branching only a few inches above ground level. In some cases the bud union has actually sunk below ground level and the fork is only just above it. These conditions, combined with a heavy growth of weeds and lack of drainage, are ideal for gummosis attack and several estates have already lost many trees from these causes.

It is not suggested that it is possible to control gummosis under these conditions. A grapefruit field is expensive to establish and a bearing tree is a valuable piece of property; it is obviously unsound, therefore, to recommend the immediate destruction and replacement of fall misshapen or diseased trees. What can be done, however, is to attempt to prolong their life for a few years while a replanting scheme is being carried out, such as by inter-plant-

(Continued on page 18)

IMPRESSIONS

(Continued from Page 11)

we were off for home . . . visiting over old times the entire trip . . . Incidentally during that luncheon we learned from one of our table mates that the New York Produce Exchange now seeking to list citrus fruits for speculation, does not handle other perishables . . . seems the eggs, butter, cheese and such like are handled on the New York Mercantile Exchange . . . In the welter of talk about Washington's Alphabeticals we got our curiosity aroused . . . we set out to locate and enumerate this large and growing family . . . and there are more of them than at first we thought . . . Of course, everybody now knows NRA and AAA . . . and PWA and CWA are pretty generally understood . . . But there's EC, Executive Council . . . NEC, National Emergency Council . . . RFC, Reconstruction Finance Corporation . . . FCA, Farm Credit Admiinstration . . . FACA, Federal Alcohol Control Administration . . . NBPW, National Board of Public Works . . . NPB, National Planning Board . . . SAB, Science Advisory Board . . . CSB, Central Statistical Board . . . IAB, Industrial Advisory Board . . . IBRT, Inter-departmental Board On Reciprocal Treaties . . . FHLBB, Federal Home Loan Bank Boards . . . BLB, Bank Liquidation Board . . . TVA, Tennessee Valley Authority . . . FCT, Federal Coordinator of Transportation . . . CCC, Civilian Conservation Corps . . . ECPC, Executive Commercial Policy Committee . . . ITPC, Inter-departmental Trade Policy Committee . . . TCFC, Temporary Committee on Foreign Trade . . . FDIC, Federal Deposit Insurance Corporation . . . CCC, (no not the one you thought, but indicating that the alphabet is getting strained) Commodity Credit Corporation . . . and the FSRC, Federal Surplus Relief Corporation . . . Then there are some youngsters . . . the following are offspring of NRA . . . NIRB, National Industrial Recovery Board . . . LAB, Labor Advisory Board . . . CAB, Consumers Advisory Board SRB, State Recovery Board . . . NCB, National Compliance Board, and the NLB, National Labor Board . . . and here, we nearly left a couple out . . . They are: . . EHFA, Electric Home and Farm Authority, which is not part of NRA . . . and the FSCA, Federal Subsistence Homestead Corporation . . . this last one started out on its own, but now is being led by the hand by the AAA . . . There as Mr. Mulligan said in speaking to his children, is all there were this morning . . . We had trouble enough copying them down . . . we wish the linotyper luck in setting them . better check, and double check . . . And Julian Langner and others say that a first requisite to the successful transaction of business in Washington today is to know all these by heart . . . This alphabetical code stuff is contagious . . . even American Fruit Growers Inc. has caught it in part . . . among themselves they long ago shortened their organization name to AFG . . . Now they've sprung the SSDD . . . which is Sales Service Development Department, or something like that . . . and C. N. (code for Pinky) Williams has been raised to preside over it . . . the object being to have two glasses of orange juice drunk where only straight gin was drunk before . . . or two grapefruit sprout where only Brussels sprouted previously . . . or something like that . . . anyhow Pinky is full of importance, and a lot of ideas . . . and short of time . . . and R. A. (Bob) Fender is presiding over AFG sales and packing houses . . . with an infield consisting of Alan Wilson and Stacy White, who seem to be tossing the sales-ball around at a pretty lively gait . . . But C. J. King Jr. missing from the line-up . . . he now covers the waterfront . . in Jacksonville, for the Time-Union . . of which his father is one of the dignitaries . . . and we venture to predict that King boy is one who will go places . . . we've felt that way about him for quite a while . . . From Atlanta H. W. Brown, of the H. G. Hastings Co., and a former classmate at Rollins College of Rex Beach, writes that we were all wet in telling how Rex spent only a few weeks years ago as a student at the Winter Park institution . . . says that was all right as concerned his first year there, but that there were later years . . . which our original informant possibly knew nothing about . . . says the Beach person was there intermittently for three or four years, and was the moving spirit of athletics while there . . . but that he got fired every year . . . for, "He was of an adventurous disposition, and when what he wanted to do clashed with the opinions of the faculty, it was just too bad for the faculty." . . . Further our correspondent says: . . . "Rex has done mighty well for himself; and if he only could have had the advantage of ***** cigarettes during his younger days there is no telling how far he could have gone." . . . "We used to go fishing together, but even after landing a big one, he didn't seem to need a *****, though I see now by the magazines it's the only thing that saves his life—must be weakening a bit." . . . Well, thanks to H. W. Brown, we have the life-history of Rex Beach straightened out . . . But there'll be no correction concerning the highly placed professor in the Divinity School of Yale University . . . we wrote that from first-hand knowledge . . . Name of that ***** cigarette which Rex Beach uses will be furnished upon application to any paid-in-advance subscriber to this publication . . . address your inquiry to Will N. Reynolds, Orlando, Florida or Winston-Salem, North Carolina . . . Ocoee in Orange County seems to be a sort of "burning ghat" for citrus packing houses . . . another one gone up in smoke there . . . This time a brand new one just erected for the Orange County Fruit Co. . . . the which is A. E. Pickard of Orlando and A. H. Davenport of Avalon Groves and Chicago . . . Just built by these two big growers and associates to handle their own fruit, the packing house seemingly was "touched off" by someone . . . Yeah, they do that . . . in Ocoee . . . Wish we could write in here the final news of the political race in Brevard county between those two well known East Coast growers, Ward C. Klingensmith of Titusville and Frank G. Clark of Indian River City . . . running for county com-

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missioner of the first district respectively as Democrat and Republican . . . last we've been able to see up to this writing Frank Clark, the present Republican incumbent was one vete ahead of Ward Klingensmith . . . with a number of absentee ballots reported still to be received and counted . . . a race like that is no place for a fellow with a weak heart . . . From Washington a note from one of our favorite people, Wm. Justice Lee . . . former treasurer of Chase & Co. . . . now one of Uncle Sam's big radio and communications experts, attached to the office of the Chief of Naval Operations . . . but who still finds time to read Impressions . . . and whose heart, if we guess right, is still in Florida . . . Among other things he comments: . . . "In the old days we never used to have bandits in Florida, but I see it has been necessary for Florida to acquire a few in order to keep up with Illnois and some other agricultural states." . . . In the home of C. Miner Berry in Sanford the height of sportsmanship during the recent national campaign . . . two radios on opposite sides of the living room going simultaneously . . . one with a Democratic, t'other with a Republican speaker . . . Which appeals to us as probably the one best way to get the real straight edge on our present national situation . . . Never before in this column have we boosted for a movie . . . but if you haven't seen Will Rogers in Judge Priest and opportunity offers, don't miss it . . . Also been reading with very great enjoyment the recent series of articles in The Cocoa Tribune by Mrs. Ruby Myers . . . concerning Cocoa and the early Indian River country of the eighties and the nineties . . . nothing has so taken us right back into our boyhood days here on this farm . . . for at that time one Florida community was much like another . . . by the bye that's a great weekly paper, The Cocoa Tribune. which Colonel Marie Holderman and Johnny Pounds run . . . Yeah, she's a colonel in her own right . . . on the Governor's staff . . . There has at times in the past been some queer coloneling in Florida . . . one colonelcy having been bestowed upon a former "Cook, third class, U. S. N." . . . but it remained for Dave Sholtz officially to recognize that the female of the species is more bilious than the male . . . Which reminds us that if we were Dave Sholtz we would create a new job in the state cabinet . . . that of Lynching-Stopper . . . and we'd appoint to it that blatant Rollins professor newly come to Florida who so assailed Dave Sholtz for not running over and stopping that recent necktie party near Marianna . . . and we'd see to it that he took the job . . . In the classic atmosphere of the Orlando office of the Dr. P. Phillips Co., a long talk with Gaynor Wiggins general manager of that up and going organization . . . the talk turned to advertising . . . a bit surprising to find that the rather non-committal active head of the Phillips' affairs has through experience obtained a knowledge of the functions, capacities and limitations of modern advertising which in our opinion exceeds that of any other citrus man with whom we have talked for a long time . . . The Dr. P. Phillips Co. during recent years has spent quite considerable money on advertising and merchandising their fruit, both fresh and canned . . . and experience is a great teacher . . . being a self-contained institution these days, largely confining themselves to marketing the fruit from their own very large acreages, the Dr. Phillips crowd haven't taken the industry as a whole into their confidence concerning what they were trying to do, and doing . . . but many in the industry might profit by knowing . . . Dr. Phillips, that human dynamo of earlier years, in quite bad health . . . and able to give less and less time to business as time passes . . . but his sons and Gaynor Wiggins putting in long hours and

THE VITAL IMPURITIES

Nature herself put them there for your benefit

IMPURITIES — that's the big word today in fertilization.

As scientific research reveals the relation of these so-called rare elements to plant growth, the subject becomes more and more important.

Chilean Natural Nitrate, in addition to its quick-acting nitrogen, supplies the vital impurities in Nature's own balance and proportions. It gives your crops boron, magnesium and iodine. It gives them potassium, calcium, sodium, strontium, lithium and many other essential elements. Mother Nature herself put these vital impurities into Chilean Nitrate. That's why its record of success in Florida is so outstanding.

When you order soda specify Chilean Natural Nitrate of Soda. That is the way to play safe.

Chilean
NATURAL NITRATE

THE OLD ORIGINAL "SODA", THE ONLY NITROGEN THAT COMES FROM THE GROUND

hard licks . . . By the way, we wonder if the fact that Howard once went to Oxford accounts for that aforementioned classic atmosphere . . . In at a polling place during the count of the November 6 ballots . . . and so many of them spoiled and voided in the voting . . . indicating that many vote with more enthusiasm than intelligence . . . Wonder if they'd arrange this government so we could vote for our real rulers, if that would help things . . . which is propounded after reflection that if it isn't Jim Farley, Donald Richberg, Harold Ickes, Frances Perkins, Henry Wallace, Rexford Guy Tugwell, Harry Hopkins et al who are running this country, we do not know who is . . . And that makes us wonder what some of you in other counties did to assure a proper citrus representation in the next legislature . . . with J. J. (Jess) Parrish in the Senate and Osborne P. Herndon of Sanford in the House, we in our county rather feel as if we had done our part . . . J. R. Crenshaw of Orlando telling of the railroad conductor so irritated with a Scotchman disputing his fare that he grabbed the latter's big suitcase and threw it out of the window . . . to be accused by the Scot of "not only being a gouge and a thief, but drowning my little boy in yon stream we passed over." . . . Which leaves with us a bit of sadness in its wake . . . for no longer may we drive over to tell that to William Edwards, who in turn probably would have a couple of other Scotch jokes saved up to relate to us . . .

GUMMOSIS OF CITRUS IN TRINIDAD

(Continued from page 15)

ing with good young trees or by felling and replanting a definite amount of the field every year.

In attempting to do this, thorough attention to cultivation is of paramount importance. Drains should be opened up and deepened if necessary, and, in addition more attention should be paid to round-weeding, cutlassing, and trimming of low branches as indicated above. The dead bark of diseased trees should be carefully cut out with a sharp knife and the wound painted over with some form of wood tar or varnish. The tree thus cleaned and exposed to light and air, may have a fair chance of recovering. In California and Florida (2) trees treated in this way appear frequently to have been seen in Trinidad, although the climate is very much more humid.

It is questionable whether it is beneficial to inarch a seriously diseased tree. Obviously, in order to treat a tree in this way, it must have a reasonable length of trunk on which to work. It is useless attempting to inarch trees which have practically no trunk and fork very low. Even if the inarches 'catch', as soon as the old trunk rots away, which it is bound to do in a few years time, the tree will fall to pieces and become useless. Where the tree has a sufficient length of straight trunk to insert three or four inarches, it may be worth trying, but all low forking, badly diseased trees are better felled and new trees supplied in their place.

The author's present opinion is that inarching should not be carried out as a routine practice on all diseased trees, but only as a last resort, after all other methods of treatment have failed. Further, felling diseased trees and replanting with good young material is on the whole sounder practice than inarching. Further research is required on this subject.

It is inevitable that in the next five years the older estates will lose many of their trees through gummosis; but, if reasonable precautions along the lines indicated in this paper, are taken, it should be possible to keep all the more recent plantings practically free from the disease.

V.—Acknowledgments

The author wishes to express his grateful thanks to Dr. Briton-Jones for his help and useful suggestions, and to the owners of the several estates visited for the kindness and help which he has invariably received from them.

New Citrus Association Is Formed

The formal organization of the new Associated Citrus Growers and Shippers of Florida was effected in Lakeland during the middle of the present month.

This group was originally brought together as the result of their protest against the new citrus agreement and the membership of the recently named tentative control committee.

Officials of the new organization state that its membership represents 60 percent of the citrus fruit of this state. Offices have been established in the Marble Arcade building in Lakeland.

Spessard L. Holland, state senator and counsel for the association, termed the move "definite acceptance of the continuously changing policy of the federal department of agriculture towards Florida."

H. C Babcock, Orlando grower, was elected president, directors and other officers were named at a meeting of the independent growers and shippers held earlier in the month.

Designated on the board were:

Grower representatives—Dr. E. C. Aurin, Fort Ogden; H. C. Babcock, Orlando; W. J. Howey, Howey-in-the-Hills; H. C. Case, Ft. Myers; Norman Vissering, Babson Park; John Barnes, Clearwater and John D. Clark, president of the Waverly Citrus Growers association.

Shipper members—J. C. Chase, Winter Park; Bernard Kilgore, Clearwater; L. C. Edwards, Tampa, and L. P. Kirkland, Auburndale.

A. M. Pratt, former manager of the Florida Citrus Growers Clearing House association, was elected secretary unanimously and manager of the organization.

H. C. Case was elected vice-president and J. C. Chase, treasurer.

L. P. Kirkland, acting chairman, said more than 1,000 growers had joined the association. Growers and shippers have equal votes, he said.

CAMERON & BARKLEY RECEIVE RUSSIAN INQUIRY

Cameron & Barkley, whose Florida business is located in Tampa, are much interested in a recent inquiry received from the All Union Research Institute of Humid Subtropics, Sukhum, Transcaucasus, USSR, asking for information as to the irrigation systems which has been featured by the Florida company.

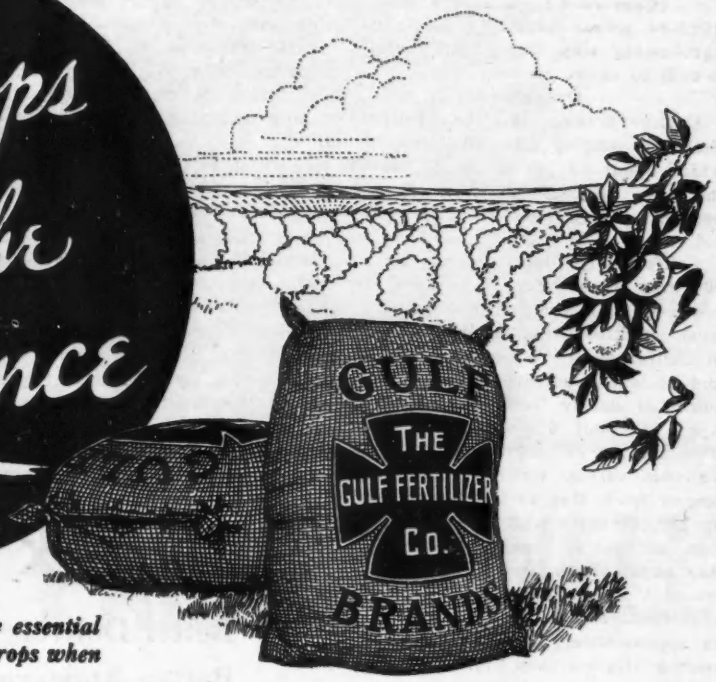
Mr. Glenn B. Jennings, manager of the Cameron & Barkley Co., Inc., was much interested in this distant query and indicated that it was evidence of the progressive spirit of the Russian institute that they were investigating modern irrigation.

Cameron & Barkley have been advertising their irrigation supplies in The Citrus Industry.

SPERRYOLA LEMON TREES

A hardy, commercial lemon, maturing on trees after the second year. Literature on request. Propagated only by HARDIN NURSERIES, Lakeland, Fla., P. O. Box 63.

Your Crops know the difference



Whatever you're growing . . . correct proportions of certain plant foods are essential to success . . . You can't fool your crops when it comes to fertilizer.

IT PAYS TO USE THE *balanced* KIND

●True enough, fertilizers often seem much the same. Outward appearances are usually similar and quite frequently guaranteed analyses are identical. But down under the ground . . . down where crops must reach for nourishment . . . there's where the difference appears! ● For regardless of their analysis, many fertilizers may contain quantities of elements with which your soil is already over supplied. Others may be lacking in the very plant foods your trees and plants need most. Such mixtures cause unsatisfactory soil conditions and eventually reduce the quality and quantity of your crop. In the long run it pays to use fertilizers that are correctly balanced - fertilizers that are known to be safe and dependable. Gulf Brands, for instance. ● Every Gulf Brand is scientifically formulated to fit a specific soil purpose. In other words, the right amounts of the right kinds of high grade materials are blended together to meet the needs of a certain crop under certain conditions. So that when a Gulf Brand is recommended for your use, you can be assured of getting all the plant foods demanded by your farm or grove. ● It is only natural that such Fertilizers, combined with the practical service of the Gulf Field Men, should go a long way toward assuring profitable crop production. But don't take our word for it. Try Gulf Brands yourself this year and see what a big difference *balanced* fertilizer makes.

THE GULF FERTILIZER COMPANY
36th St. South of E. Broadway, Tampa, Florida

GULF BRANDS of FERTILIZER

Whatever you're growing, there's a Gulf Brand to fit your exact need

THE CITRUS FRUIT OUT-LOOK FOR 1 9 3 5

(Continued from page 5)

1933-34 season indicates that such agreements may be of substantial benefit to citrus growers.

Oranges

Orange acreage in the United States is roughly 539,000 acres, of which about 88 percent is of bearing age. About two-fifths of the bearing acreage is less than 15 years old.

California has approximately 235,000 acres in oranges, 90 percent of which is in bearing. Trees are in good condition. About 100,000 acres in California are Washington Navel and miscellaneous varieties which are marketed mainly from November to April. About 6 percent of these trees are not of bearing age. The Valencia variety which is marketed largely from May to October makes up 135,000 acres with 12 percent of them not yet in bearing. Some further expansion in the bearing acreage of Valencias is indicated for the next few years as constrasted with an approximately stable acreage of bearing Navels and miscellaneous varieties.

Florida has about 263,000 acres in oranges and grapefruit. Plantings are moderate but are at a higher rate than 2 years ago. Most trees are receiving good care. Early oranges, marketed mainly from October to February make up about half of the total acreage, with 15 percent not of bearing age. Late oranges marketed mostly from March to July comprise about 40 percent of the acreage of which 13 percent is not yet in bearing. Tangerines, for which the market season is roughly November to April, make up about 10 percent of the acreage, with only 3 percent under bearing age. Of the total bearing acreage of oranges and tangerines in Florida about three-fifths is under 15 years old.

Texas has about 28,000 acres of orange trees of which approximately one-fourth are not of bearing age. In Alabama, Mississippi and Louisana production is largely Satsumas. Acreage in these 3 states and Arizona is about 12,000, with one-fifth not of bearing age.

Orange production in the United States averaged about 48,000,000 boxes from 1929 to 1933, an increase of nearly one-fourth over the production of the preceding 5 years. The average of the 5 years 1934-38 is likely to show a further increase owing to the large number of trees that have a greater bearing capacity as they approach 15 years of age. The crop forecast for 1934-35 of 57,000,000 boxes is the largest on record.

The orange export season is divided into two periods—the winter season, November to April, and the summer season, May to October. Exports from the United States, which usually approximate 7 or 8 percent of the crop, go mainly to Canada during the winter season, the United Kingdom, and other European countries during the summer season. All during the year relatively small quantities are exported to certain Latin American and Asiastic countries. About two-thirds of the annual exports go to Canada and one-fifth to the United Kingdom. The remainder is usually about equally divided between continental European countries, and Latin American and Asiastic countries.

Oranges are not exported to Europe in any considerable volume during the winter season because the large winter orange exports from the Mediterranean countries and from Palestine dominate the markets. Exports from these countries are increasing. Most of the exports of summer oranges from the United States are Valencias from California.

Brazil and South Africa are increasing their exports of oranges during the summer season. These practically all go to Europe, especially the United Kingdom, where South African oranges entered duty-free.

(Continued on page 24)

Brogdex means--

Better Delivery
Better Appearance
Better Keeping Qualities
Better Price

Stem end rot is taking a pretty heavy toll this year. No one seems to be immune, but it is to be noted that those houses that have installed Brogdex have kept their losses at a very low level. Brogdex has meant a much better delivery and therefore a big saving in shrinkage losses.

All are agreed that the appearance of the fruit will greatly influence the price. Any evidence of shrinkage, or even just a dullness of the shine, will cause it to be discounted. Brogdex treated fruit keeps exceptionally well, maintaining its fresh, attractive appearance clear through to the consumer.

All of which means a greater net return to the man who owns the fruit.

These are the reasons for the fine reputation Brogdex has earned in the markets of the north. Buyers specify it on f. o. b. sales and pay a premium for it on auction sales. Some will handle no other kind.

Measured by results over a period of years Brogdex is value received in a very large way.

Florida Brogdex Distributors

Inc.

Dunedin, Florida

Mr. J. F. Cocowitch of Dunnellon, Fla., examining some of his premium-quality fruit.

"AGRICO PAID ME WELL"

FRUIT GRADED 90% U. S. NO. 1, MATURED EARLY, PAID BEST RETURN IN SECTION

Mr. J. F. Cocowitch of Dunnellon, Marion County, has found from actual cash returns that a little extra per ton spent for Agrico means substantial extra profits at shipping time. In a letter dated October 29, 1934, Mr. Cocowitch says:

"My 40-acre Parson Brown orange grove has been raised on "AA Quality" Fertilizers, and it is a pleasure to say that I have the best grove in this section. I started it with Bradley's, but since I changed to Agrico I can certainly notice the difference.

Crop Matured Early

"This year my 10-year-old trees averaged 3 boxes to the tree, when neighbors averaged only 2 boxes. My fruit was the first picked in this section, and due to the large size it passed the test early, enabling me to ship on the high market. Because of early maturity and high quality, I got a guarantee of $1 a box and a 50-50 split of profit over marketing charge. My returns were the best in this section—20% above average.

"Agrico Paid Me Well"

"Friends ask me if I do not pay too much for fertilizer. I answer by showing my grove and telling them my cost of production. When I started in the orange business I didn't know much about it, but I did know that if I was to make a success of it I had to use the right kind of fertilizers and use them under proper supervision. I am certainly well pleased with results from using Agrico for it certainly has paid me well."

Hundreds of other growers who have tried Agrico on truck crops as well as on citrus have written us letters like the one above. Many have made side-by-side tests comparing Agrico with other fertilizers. On the basis of actual tests, not guesses, these growers state that Agrico brings bigger yields of higher-quality crops—and most of all, early maturity which enables them to get the benefit of high price on early markets.

Why not try Agrico on at least part of your crop this year. Remember that in addition to the usual nitrogen, phosphorus and potash, Agrico contains *extra plant foods that mean extra crop-producing power.*

The AMERICAN AGRICULTURAL CHEMICAL Co.

Makers of Bradley's and Agrico Fertilizers

PIERCE, FLORIDA

AGRICO

THE FERTILIZER WITH THE EXTRA PLANT FOODS

IRRIGATING TO HOLD THE CITRUS CROP

(Continued from page 6)

time because the trees are still drawing very heavy on the soil to supply their needs and keep up the growth and development of the fruit. Also the evaporation losses have been rather heavy because of the warm weather and continuous tree and cover-crop growth.

It should be borne in mind that a low soil moisture content between now and January will have the effect of lowering the tree vitality and reducing the quality of the fruit. As soon as the fruit reaches the stage of maturity that the seed are matured, the tree will begin to draw water from the fruit in an effort to supply its needs, in an emergency, and will thus cause a shrinkage of the fruit and dropping. In order to maintain a firm fruit it is highly essential to supply enough water to take care of the tree's needs. Where trees are suffering from a deficiency of water the fruit is weakened, resulting not only in dropping but in lower resistance to disease, such as stemend rot and blue mold decay. The branches that carry the fruit are also weakened, which usually results in an increased amount of dead twigs and a fertile source of melanose for the next crop.

From the standpoint of preparing trees for next year's crop, it is essential to maintain sufficient moisture throughout the entire root zone to permit maximum root growth and development during the fall and early winter. It has been noted that during the rainy season when the soil is well supplied with moisture throughout, and in fact over-supplied in lower depths of the root zone, the active root system shows a greater development near the surface. If the soil moisture in lower depths is maintained throughout the fall and early winter the root development in these lower depths is consequently greater increased. This establishment of a deep root zone in the tree during the fall brings about a tree condition most favorable for maximum utilization of plant food which results in more vigorous spring growth and a heavier setting of fruit.

Apparently it is desirable to have the soil fairly well supplied with moisture the full depth of the root zone before the fall or early winter application of fertilizer is made. This seems to permit a more even distribution of the plant food throughout the root zone. Of course, if the fertilizer has already been applied and the water applications made later the plantfood can thereby be distributed through the soil and made available to the tree, provided it is in a water soluble form. In the fall and winter fertilizing, attention should be given to this matter of applying plant food in available form so that it may be distributed through the soil and made available to the trees for the fall and winter preparation and early spring growth activities. A slowly available form of organic fertilizer applied at this time of the year will be partially available to the trees only in case of an abundant supply of soil moisture.

In applying irrigation water, bear in mind that in the average citrus soils, an inch of water will wet the soil about one foot deep. In practice this means that where there is ample soil moisture at depths of 2 to 3 feet and the first foot is dry, an inch of water will be ample. If on the other hand there is a small amount of moisture down to about 12 or 14 inches deep and the soil is dry below that depth about an inch and a half

(Continued on page 26)

Use GRANULAR 'AERO' CYANAMID ON YOUR GROVES this Fall

APPLY JUST PRIOR TO DISCING IN YOUR COVER CROP

Write for this leaflet at once. Ask for X-303

Granular 'Aero' Cyanamid hastens decomposition and liberates the plant food contained in the cover crop for use by the trees.

Granular 'Aero' Cyanamid contains 22 per cent non-leaching nitrogen whose progressive availability produces even, steady development of trees and fruit.

Granular 'Aero' Cyanamid supplies 70 per cent soil improving lime which sweetens the soil.

The use of Granular AERO Cyanamid in the fall fits admirably into the program of citrus fertilization advocated by the Florida Experiment Station which recommends, for instance, that a 10-year-old tree should receive annually about 1⅔ pounds of ammonia and 2 pounds each of phosphoric acid and potash. This can be supplied by an application of 3 pounds of Granular AERO Cyanamid in the summer or fall, plus 8 pounds of 6-12-12 complete fertilizer twice a year.

A NUMBER OF SATISFIED CUSTOMERS IN FLORIDA USE OVER 100 TONS OF GRANULAR 'AERO' CYANAMID EACH ANNUALLY

AMERICAN CYANAMID COMPANY

Manufacturers of 'Aero' Cyanamid and 'Ammo-Phos'

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'Aero' Cyanamid is Nitrogen plus Lime

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Insist on Armour's BIG CROP Fertilizers

If you are in doubt concerning the exact formula for your grove or truck crops, ask to have the Armour field representative make a study of your needs without cost or obligation.

WHEN you find out what Armour's BIG CROP Fertilizers can mean to your crops, you will want no other brand. You will be convinced, like many of Florida's most successful growers, that these fertilizers are made to "Make Every Acre Do Its Best".

There is a grade of Armour's BIG CROP Fertilizer to meet the exacting needs of every soil and every crop produced in Florida. More than thirty-eight years of manufacturing experience stands back of these mixtures and actual use under crops throughout Florida prove their crop-producing value.

Consider these advantages before buying fertilizer. Follow the example set by hundreds of prominent growers of the State. Their profits are our best recommendation for the use of Armour's BIG CROP Fertilizers for your grove or field. Decide now to use them under your next crop.

Prices Now on a Delivered Basis

ARMOUR FERTILIZER WORKS
Jacksonville, Florida

Get prices from our Local Selling Agent or our Field Representative

MAKE EVERY ACRE DO ITS BEST

THE CITRUS FRUIT OUTLOOK FOR 1935

(Continued from page 20)

More competition may be expected in foreign markets. In years of large Brazilian and South African orange crops, exports from the United States to Europe during the summer season will be light. United States oranges are also meeting more competition in Canada throughout the year from duty-free Empire oranges from South Africa, Jamaica, and from Palestine.

The proportion of the crop exported in 1933-34 was about the average, amounting to around 3,300,000 boxes, a somewhat smaller quantity than in the preceding year. The larger orange crop expected in the United States for 1934 indicates that exports may be somewhat heavier during 1934-35, especially during the summer season.

Puerto Rico produces around 1,000,000 boxes of oranges a year but a large proportion of the fruit is in small holdings or is allowed to grow wild. Consequently exports, mostly to the United States, are only important in years of high prices. In the last 3 seasons shipments to this country from Puerto Rico have ranged from 15,000 to 40,000 boxes.

Grapefruit

There are approximately 215,000 acres of grapefruit trees in the United States distributed as follows: Florida 43 percent, Texas, 42 percent, and California and Arizona 15 percent.

Of Florida's 93,000 acres of grapefruit, about 60 per cent is classed as "early" and moves to market from September to February, and the remainder is classed as "late". Of the early, 6 per cent is under bearing age, compared with 15 percent for the late. For both classes of bearing trees in Florida about 65 percent is under 15 years old.

Texas has about 91,000 acres with 38 percent not yet bearing. It is estimated that 50,000 trees (including some trees other than grapefruit) were lost as a result of the storm of September, 1933. Plantings in Texas have been at a slower rate during the last 2 years. The 276,000 grapefruit trees set out in the year ended Mar. 31, 1934, compared with 402,000 the preceding year, and 949,000 the year before that. In California nearly one-fourth and in Arizona about one-half of that acreage is not yet in bearing.

There has been a rapid increase in grapefruit production. In the 5 years 1929-33 the average production of 15,000,000 boxes was almost 50 percent greater than the average of the 5 years, 1924-28. The 1934-35 crop, forecast at slightly less than 20,000,000 boxes, is of record size. With about one-fourth of the country's grapefruit trees not yet in bearing and with three-fourths of the bearing trees under 15 years, further increases in the size of the crop over a period of years may be expected.

The canning industry is an important market outlet for grapefruit. About 20 percent of the 1933-34 Florida grapefruit crop was canned as grapefruit hearts or juice. From 1925-26 to 1930-31, canning of grapefruit hearts increased nearly six-fold to 2,412,000 cases of 24 No. 2 cans. There was then a decline to about 900,000 cases in 1931-32. In each of the last two seasons the pack was about 2,200,000 cases. The pack of grapefruit juice has averaged about 500,000 cases in the last 4 seasons. The 1933-34 pack of 610,000 cases of juice was less than the 726,000 cases packed the preceding year but was considerably greater than the quantity packed in either 1930-31 or 1931-32. Some canning and processing of grapefruit is developing in Texas but as yet the pack there is only a small percentage of that produced in Florida. There is apparently an upward trend in consumption of juices including grapefruit, tomato, prune, and pineapple juices.

World grapefruit production is sharply upward. A few years ago grapefruit were received in the United Kingdom, chiefly during the winter months, from the United States, Puerto Rico, Cuba and Jamaica. Now they are received in important quantities throughout the year from many countries. Grapefruit from the United States, Puerto Rico and Cuba arrive the year around. Palestine and Jamaica supply important quantities during the winter months with lesser quantities from Trinidad, British Honduras, Honduras, Spain, and Italy. South Africa, Brazil, Southern Rhodesia, Portuguese East Africa, Australia, and Argentina supply grapefruit the warmer months.

Competition in the export markets may be expected to increase for at least a decade. In European countries other than the United Kingdom, the per capita consumption of grapefruit is very small any any appreciable increase in consumer interest would tend to relieve the situation.

Around 1,000,000 boxes of grapefruit were exported from the United States in 1933-34 (September to August) out of the 14,243,000 boxes produced. This was about the average

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A steel fireproof building located in the heart of the city

Every Room With Combination Tub and Shower Bath, Radio, Electric Ceiling Fan, Slat Door for Summer Ventilation, Comfortable Beds with Mattresses of Inner Spring Construction and Individual Reading Lamps

proportion, or 7 percent. As usual the United Kingdom took around 35 percent. For the most part, shipments to continental European countries increased although they continued to be small. Exports are likely to be somewhat larger from the crop of 19,662,000 boxes forecast for 1934-35. From a price standpoint the export outlook is not promising.

In addition to the fresh grapefruit exported, a large quantity of the grapefruit that is canned moves into export. This trade is increasing rapidly. Exports in 1933-34 amounted to 767,000 cases which is equivalent to 27 percent of the Florida pack of 2,795,000 cases (24 No. 2 cans) of hearts and juice. Practically all the exports went to the United Kingdom and small quantities went to a number of other countries; the most important of these was Canada, which took a little over 5,000 cases.

Since a case of canned grapefruit is roughly equal to a box of fresh grapefruit it can be seen that almost as much of the grapefruit crop was exported in the canned state as fresh. Taken together, the exports of fresh and canned grapefruit were equal to about 12 percent of the total United States grapefruit crop. The outlook for canned grapefruit is more favorable than for the fresh fruit.

Grapefruit production in Puerto Rico has fluctuated rather widely during the last 7 years, or roughly from 300,000 to 1,400,000 boxes, principally because of hurricane damage. Fresh shipments to the United States have averaged about 540,000 boxes and around 36,000 boxes have been shipped direct to foreign countries. A little less than 200,000 cases of canned grapefruit have been produced a year; most of these were shipped to the United States.

The 1934-35 Puerto Rican crop is expected to be about the same size as the 1933-34 crop, or something over 800,000 boxes. By January 1, 1935, probably about one-third of the crop will have been marketed. Since the late crop is running to small sizes, exports to Europe are likely to be heavier than usual next spring.

TERMITES AND ANTS IN BANKED TREES

(Continued from page 9)

red or black ants.

In conclusion, do not bank your trees unnecessarily early, nor delay the pulling down of banks longer than after the danger of a freeze is over in the spring. Ants are particularly apt to be injurious when the weather warms up in the spring or also early in the fall. During the cooler weather they will not be as active. In the main citrus belt of Florida we have never had a disastrous freeze until nearly Christmas. Therefore, it would ordinarily be safe to delay the banking of citrus trees in the main citrus section of Florida until about the first of December. Of course, if one has a large acreage the banking will have to start earlier. On the other hand, if one has but a few trees and lives on or near the place, he could probably delay the banking until the warning of a freeze is actually sent out by the Weather Bureau. Again, we have never had a disastrous freeze in the main citrus belt of Florida after the middle of February, so by the last of February or first of March it will be safe to pull down the bank. In other words, after the first of March there will be more danger from ants and termites than there will be from a freeze, so the banks should be pulled down. Of course, in the Satsuma belt of West Florida the trees should be banked somewhat earlier and left up somewhat longer.

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Ethylene Colors Fruit Evenly ... helps it sell for "top-price"

Top-price for *all* your fruit, that's what you want, and that's what **Ethylene** coloring will help you get. How do we know? Because thousands of growers and members of Fruit Exchanges and Associations are getting top-prices for **Ethylene**-colored fruit.

Here's what **Ethylene** Gas does. It colors mature fruit in ⅓ of the time that it takes by other methods. Then, too, it colors *all of your fruit evenly* . . . no other method does that. And, better yet, it allows you to color your mature fruit when you want to . . . that is at the time when it will catch "top-price."

Does it cost much? No. **Ethylene** Gas does all these things at a cost of only a few cents a full carload of fruit. Get the full story of **Ethylene.** Send for the FREE book. Talk, too, with your Exchange Officials.

Sell tomatoes locally?

If so, pick them green-ripe and color them with **Ethylene.** You get them to market 2 to 4 weeks earlier than waiting for field ripening. Defeat field mice, wire worms, sun scald, cracking, wind and hail damage.

FREE *Send for your copy today*

This 20-page booklet, issued by the largest suppliers of *Ethylene* to the Citrus Industry, tells the story of *Ethylene* Gas for coloring mature fruit and vegetables . . . explains how it is used . . . by Fruit Exchanges and others. Write Carbide and Carbon Chemicals Corporation, Desk C, 30 East 42nd St., New York.

Unit of Union Carbide UCC *and Carbon Corporation*

The Best Market In Florida

Is made up of the citrus growers of this state.

The logical medium through which to appeal to this group is

The Citrus Industry

because it is addressed solely to this group of readers.

A lot of advertisers have already learned this.

—A trial will convince you of the wisdom of this course.

IRRIGATING TO HOLD THE CITRUS CROP

(Continued from page 22)

of water will be required to penetrate and wet the lower depths. If enough is applied to wet thoroughly to a depth of about 3 feet, additional applications may not be needed before late January or early February, because with the low root concentration of the 2 to 3 foot depths the soil usually holds enough water to last 30 to 60 days, and this is likely to be supplemented by occasional showers which should also keep up the moisture content of the first foot depth. In case the rainfall should be unusually light an additional light application might be desirable to replace moisture lost from near the surface.

EFFECTS OF ZINC ON FRENCHED CITRUS IN POLK COUNTY

(Continued from page 10)

is not generally recommended where insect control is a factor.

Zinc sulphate can be applied with bordeaux by using:

10 pounds of 89% zinc sulphate, 5 pounds finely ground hydrated lime 100 gallons of a 3-3-5 bordeaux mixture.

Thorough coverage of all foilage is important if satisfactory results are to be obtained by spraying with zinc sulphate mixtures. It is also essential that the formula be properly mixed before applying.

Zinc sulphate should be dissolved thoroughly by sifting slowly into a bucket of water and stirring vigorously until dissolved before pouring into the spray tank. As the spray tank is being filled with water start the agitator and add the finely ground hydrated lime slowly, so that it will go into suspension, then add the spreader, after which the soluton of zinc sulphate should be poured into the tank.

If lime sulphur solution is used, it should be poured into the tank first, after the tank is nearly filled with water, then pour in the zinc sulphate solution.

Time of application seems to be an important factor, greater response was noted in the February and March spraying, although good results were obtained by spraying prior to the seasonal flush of growth.

Results obtained depend largely upon the amount of actual zinc applied to the tree by a thorough coverage, and also where there is a zinc deficiency in the soil and tree, which justified the necessity of a zinc spraying. The only way to determine this is by the condition of the trees.

Where lime is used with zinc sulphate or other sprays, there sometimes follows an infestation of scale, which necessitates following up with an oil spray.

Growers anticipating the use of zinc sulphate as a spray for the control of frenching should become thoroughly familiar with its usage, for improper mixtures are likely to cause considerable damage to citrus.

CITRUS MARKET NEWS WITH INTERPRETATIONS BROADCAST OVER WRUF

Citrus market reports for Florida growers are broadcast daily during the Florida Farm Hour over WRUF, according to an announcement by officials of the Agricultural Extension Service. These reports with interpretations and comments are on the air at about 12:15 p. m. The service began November 1 and will continue through the citrus season, it was announced.

FOR SALE

Lists of Florida Citrus Growers compiled from recent survey of groves, arranged by counties. Name, address, acreage and legal description.

Also list wealthy residents of Florida.

W. L. Lamar
P. O. Box 333
JACKSONVILLE, FLA.

J. F. AHERN
Consulting Engineer
Specializing In
Diesel, Electric and
Hydraulic Engineering
Phone 7-4755 2365 Post St.
Jacksonville, Florida

E. L. LORD
Consulting Horticulturist.
Grove Advisory Service.
Economical, Safe, Effective.
Why not give your grove a break?
P. O. Box 757
Winter Haven, Fla.

CLASSIFIED ADVERTISEMENTS

PERSONAL.

QUIT TOBACCO easily, inexpensively, without drugs. Send address. N. A. Stokes, Mohawk, Florida.

THRIFTY TREES and budwood from record performance Perrine Lemon parents, Persian Lime and other citrus varieties. DeSoto Nurseries, DeSoto City, Fla.

UP to $20.00 paid for Indian Head Cents; Half Cents $125.00; Large Copper Cents $500.00, etc. Send dime for list. Romanocoinshop, D. Springfield, Mass.

WANTED: — Good second hand double orange sizer, which will run two cars. Christian & Neal, McIntosh, Fla.

MEN WANTED—Sell Shirts. No experience necessary. Free samples. Commission in advance. Free ties with shirts. Carroll Mills, 875A Flatbush Av., Brooklyn N. Y.

CLEOPATRA Mandarin root-stock, liningout size and larger. Also sour orange. Variety of buds on Cleo. Grand Island Nurseries, Eustis, Fla.

FORECRED PULLETS FOR SALE—White Leghorns and Anconas ready to ship. Barred Rocks and R. I. Reds shortly. Several hundred yearling White Leghorn hens now laying 70%. Write or wire for prices. C. A. Norman, Dr. 1440, Knoxville, Tenn.

WANTED—To hear from owner having good farm for sale. Cash price, particulars, John Black, Chippewa Falls, Wisconsin.

LAREDO SOY BEANS, considered free from nematode, excellent for hay and soil improvement. Write the Baldwin County Seed Growers Association, Loxley, Alabama, for prices.

FANCY ABAKKA pineapple plants. R. A. Saeger. Ankona, Florida.

FOR SALE—Selected budwood and trees of Perrine lemon, Tahiti lime, new varieties tangeloes and other citrus. Ward's Nursery, Avon Park, Fla.

DETAILED SOIL Analysis, Interpretations. $2.50. Soil Laboratory, Frostproof, Florida.

SCENIC HIGHWAY NURSERIES has a large stock of early and late grapefruit and oranges. One, two and three year buds. This nursery has been operated since 1883 by G. H. Gibbons, Waverly, Fla.

NEW COMMERCIAL lemon for Florida, the Perrine; proven. All residents need yard trees, keeping Florida money at home. Booking orders for budded stock for Winter delivery. DeSoto Nurseries, DeSoto City, Fla.

WANTED—To hear from owner of land for sale. O. Hawley, Baldwin, Wis.

SATSUMA BUDWOOD from Bearing Trees. Hills Fruit Farm, Panama City, Fla.

SEED—Rough lemon, sour orange, cleopatra. New crop from type true parent trees. Also thrifty seedlings. DeSoto Nurseries, De Soto City, Florida.

BUDDED trees new Florida commercial lemon, proven, thin skinned, juicy, scab immune. Also rough lemon, sour orange and Cleopatra seed and liningout seedlings. DeSoto Nurseries, DeSoto City, Fla.

SEEDS—ROUGH LEMON, SOUR ORANGE, CLEOPATRA. Pure, fresh, good germination. Also seedlings lineout size. De Soto Nurseries, DeSoto City, Fla.

CROTALARIA SPECTABILIS—Seed for sale. New crop, well cured, bright and clean. Price 25c per pound in 100 pound lots and over, 35c per pound in less quantities, f. o. b. Hastings, Bunnell, Lowell and San Antonio, Florida. F. M. LEONARD & COMPANY, Hastings, Florida.

WANTED—Position as packing house foreman; in citrus business twenty-five years; ten years' experience as foreman; married man. J. R. Henry, Okahumpka, Florida.